Southern California Water: Study Regionally

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SoCal Storm Water Forum

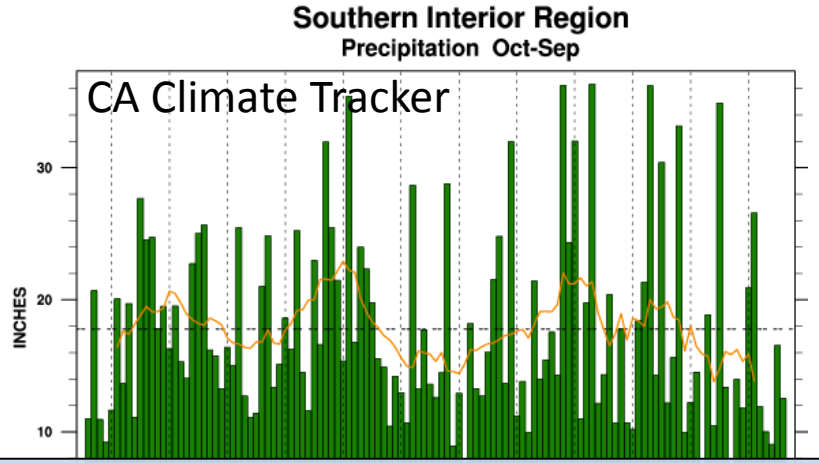
USGS science for a changing world

NIDIS NATIONAL INTEGRATED DROUGHT INFORMATION SYSTEM

CNAP California-Nevada Climate Applications Program A NOAA RISA team

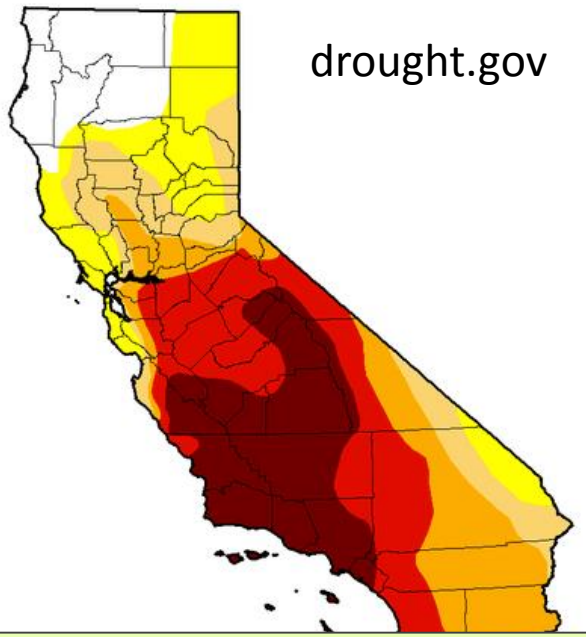
CW3E

3 Main Points



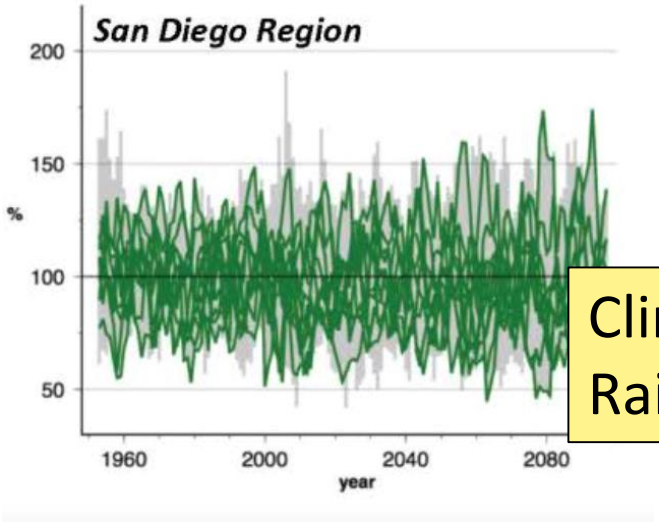
CA Climate Tracker

S. CA Climate is highly variable & extreme events are important



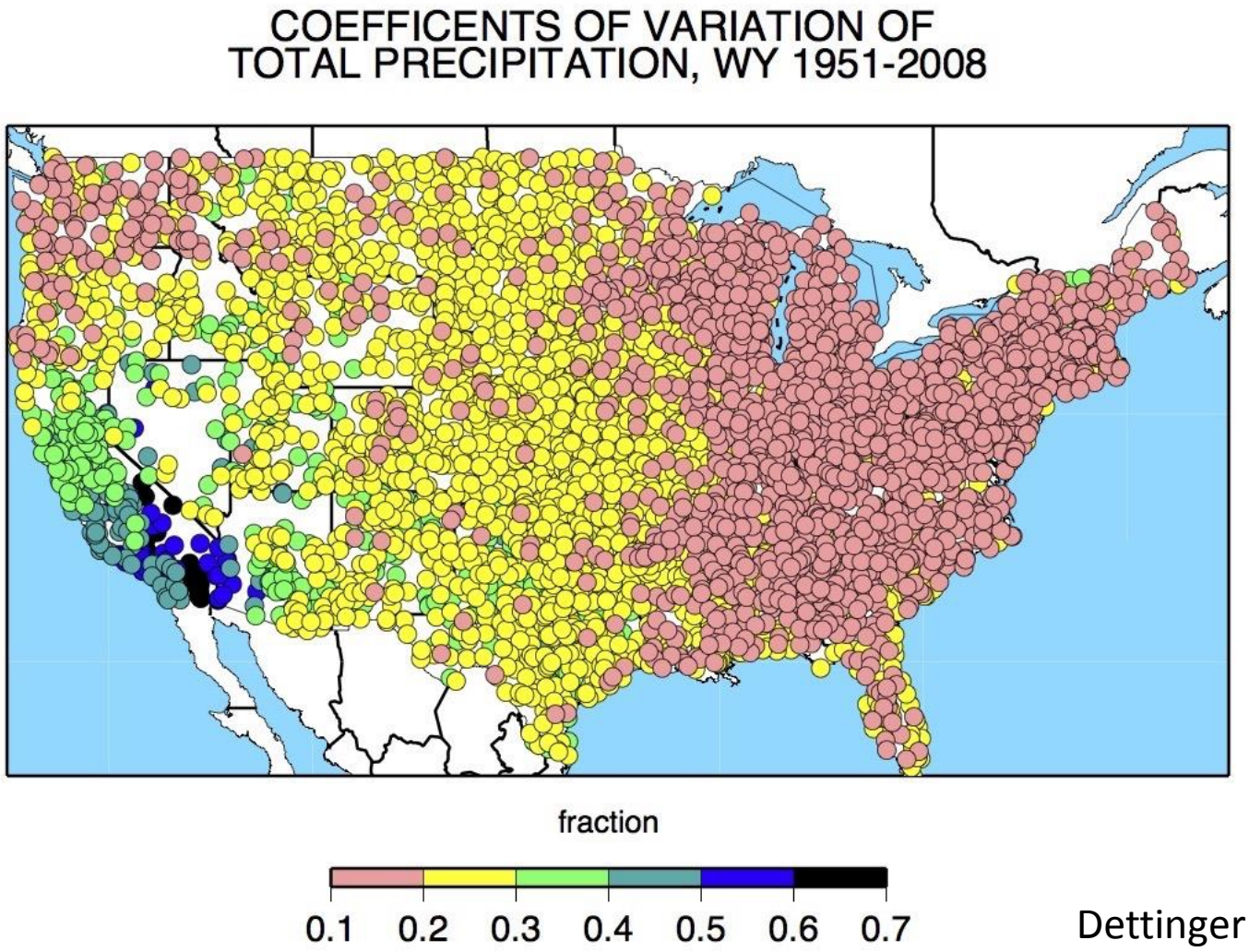
drought.gov

Different types of drought: water supply and landscape



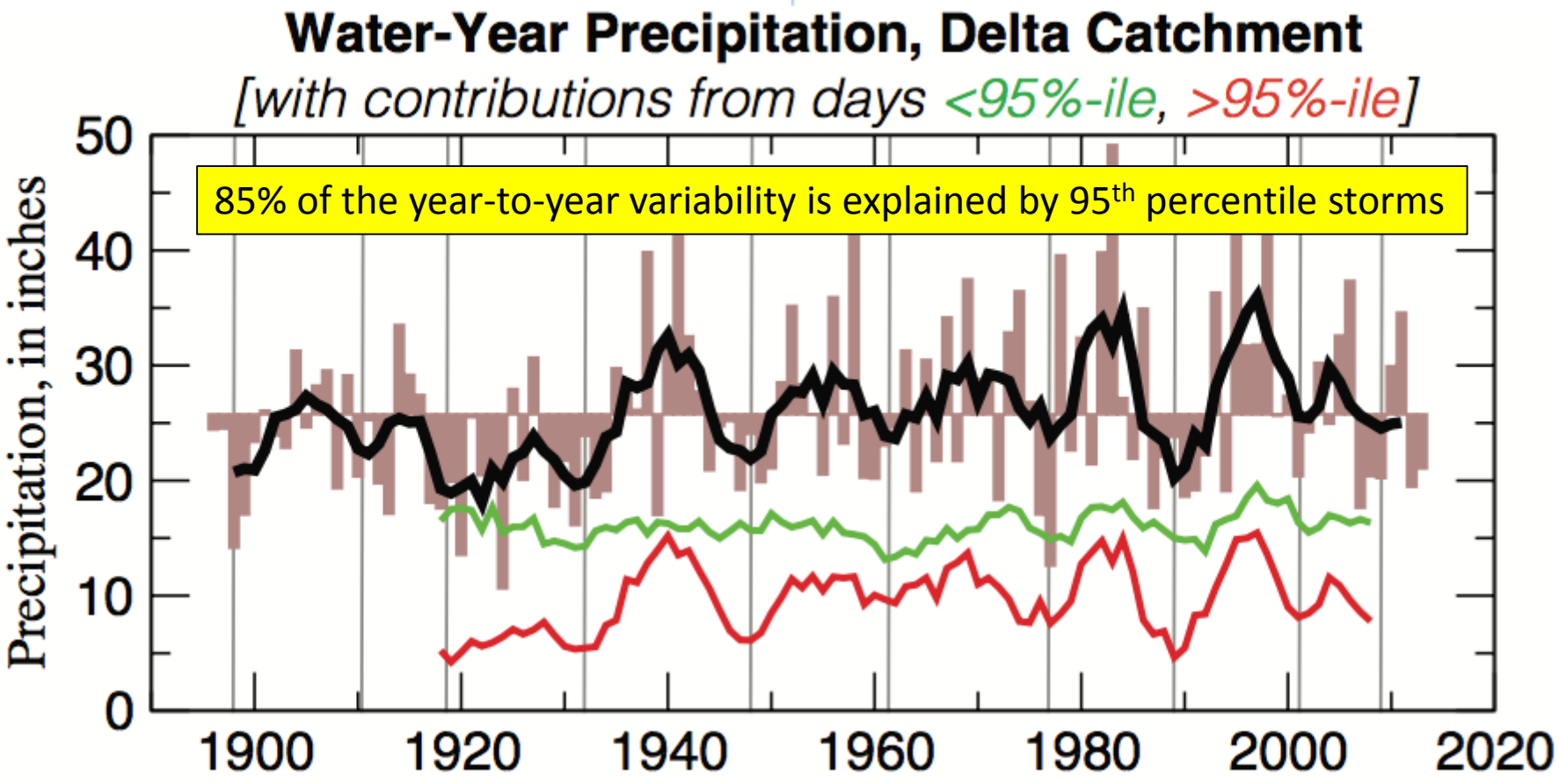
Climate projections are Uncertain for CA Rainfall – Extremes more Extreme

S. CA has highest year-to-year precipitation variability in the US



Dettinger et al. 2011

Extreme Precipitation Events Explain Year-to-Year Variability

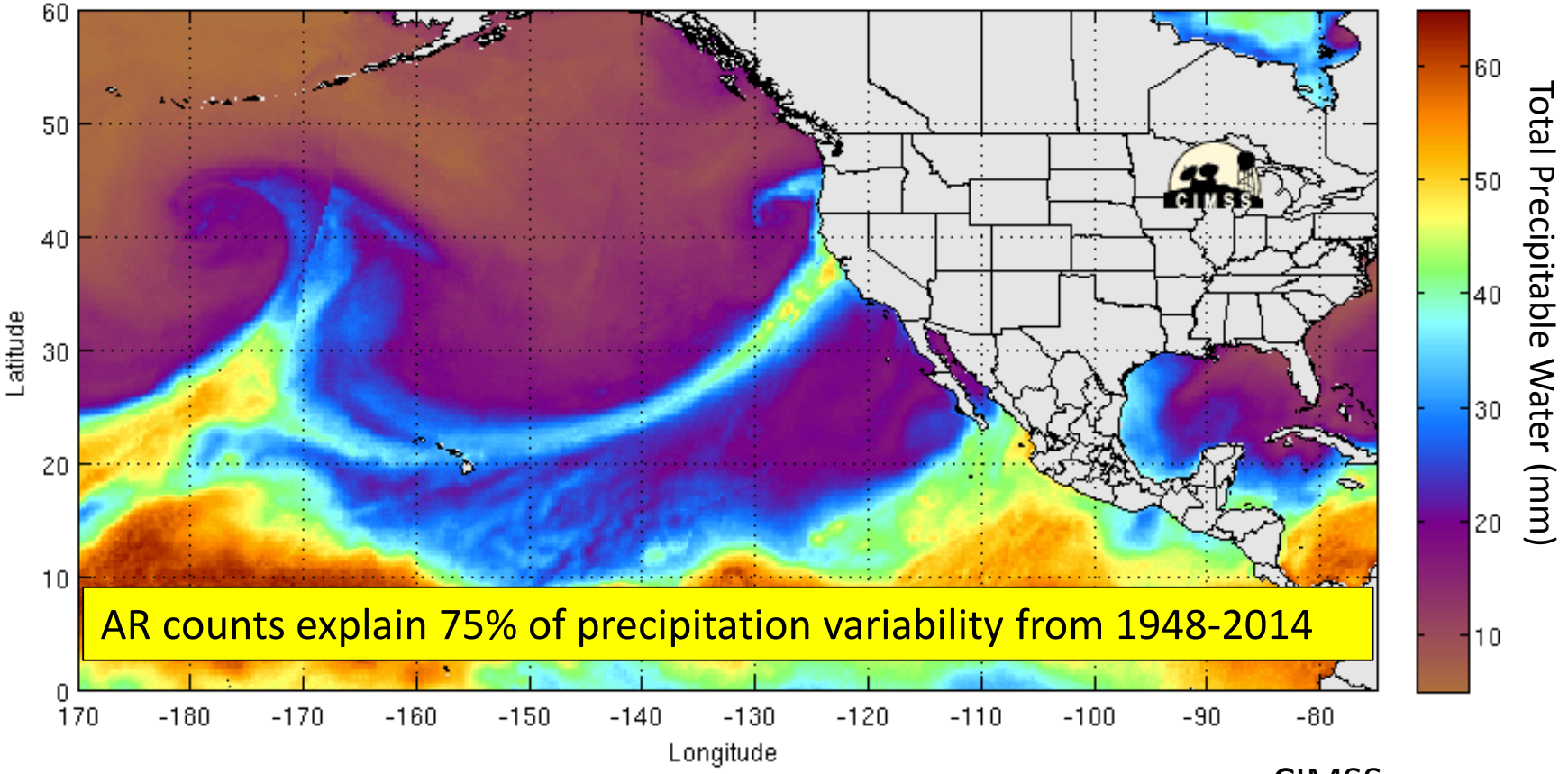


Dettinger and Cayan, 2014

Atmospheric Rivers (ARs)

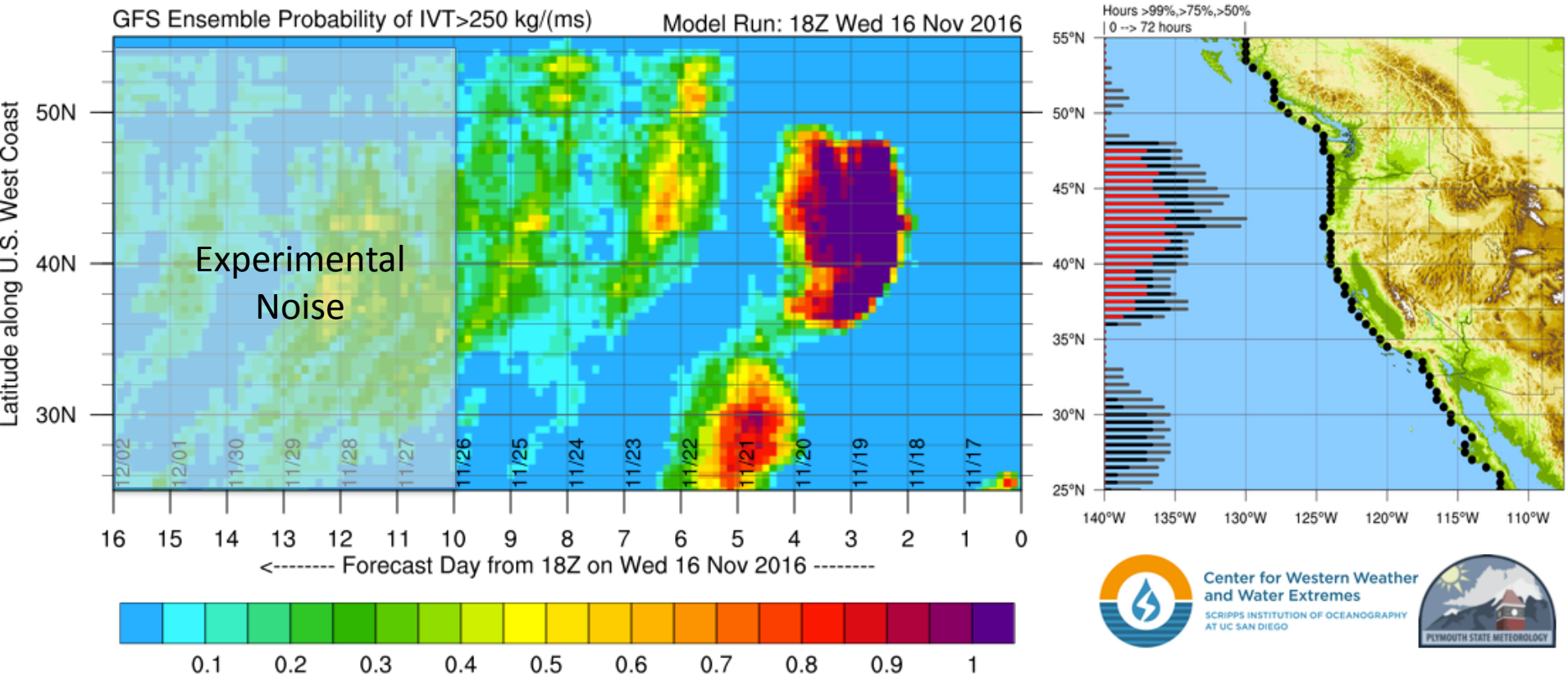
Transport 7.5-15 times the average flow of water at the mouth of the Mississippi

Composite Dec 11, 2014



CIMSS

Forecasting Atmospheric Rivers
cw3e.ucsd.edu

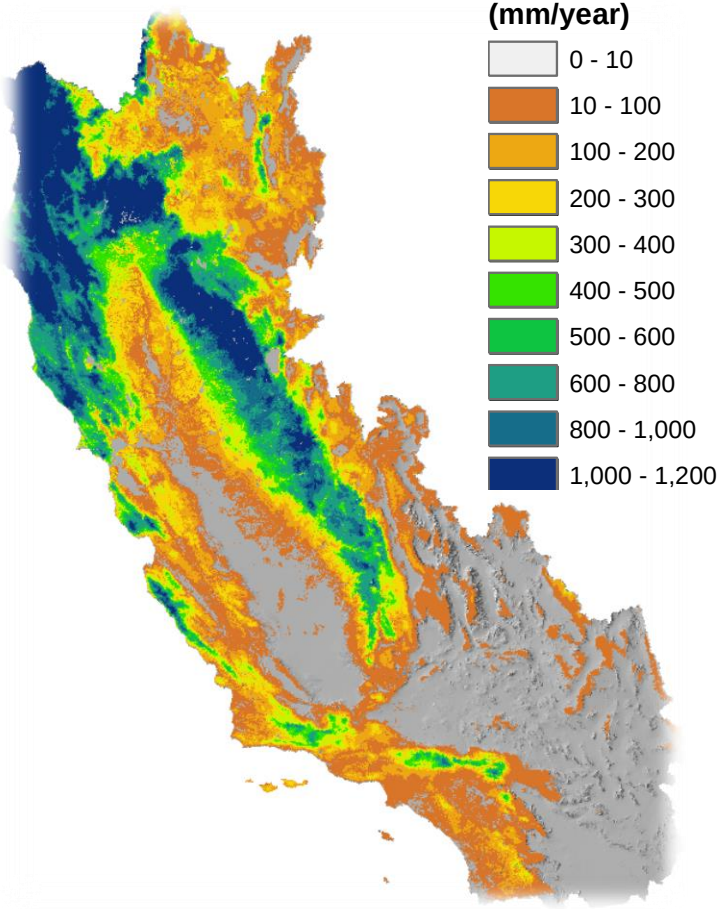


Center for Western Weather and Water Extremes
SCRIPPS INSTITUTION OF OCEANOGRAPHY AT UC SAN DIEGO

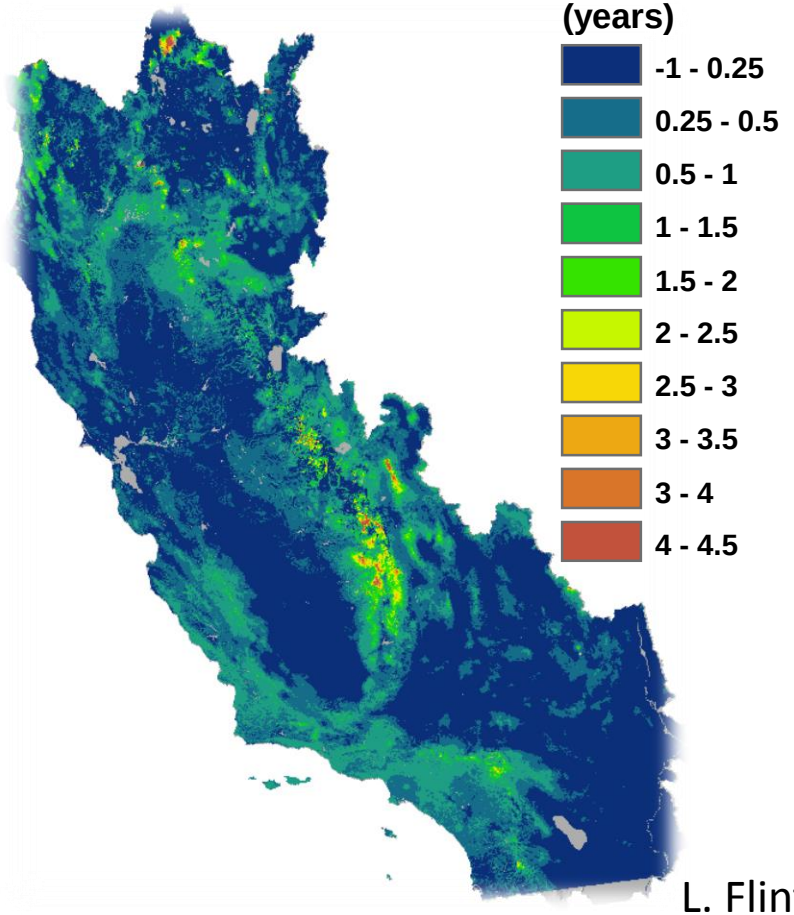
PLYMOUTH STATE METEOROLOGY

Water Supply Drought: Run-off and Recharge

Climatology
1981-2010

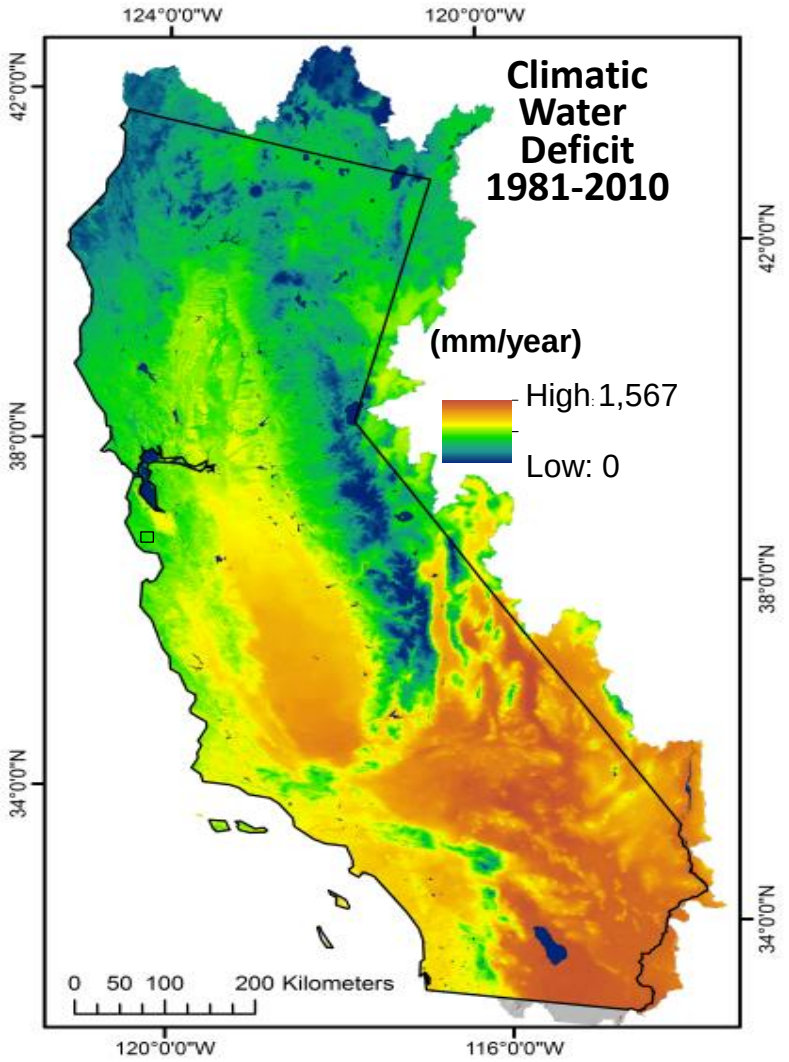


Recent Drought Deficit
2012-2016



L. Flint

Climate Water Deficit:
Missing water from landscapes



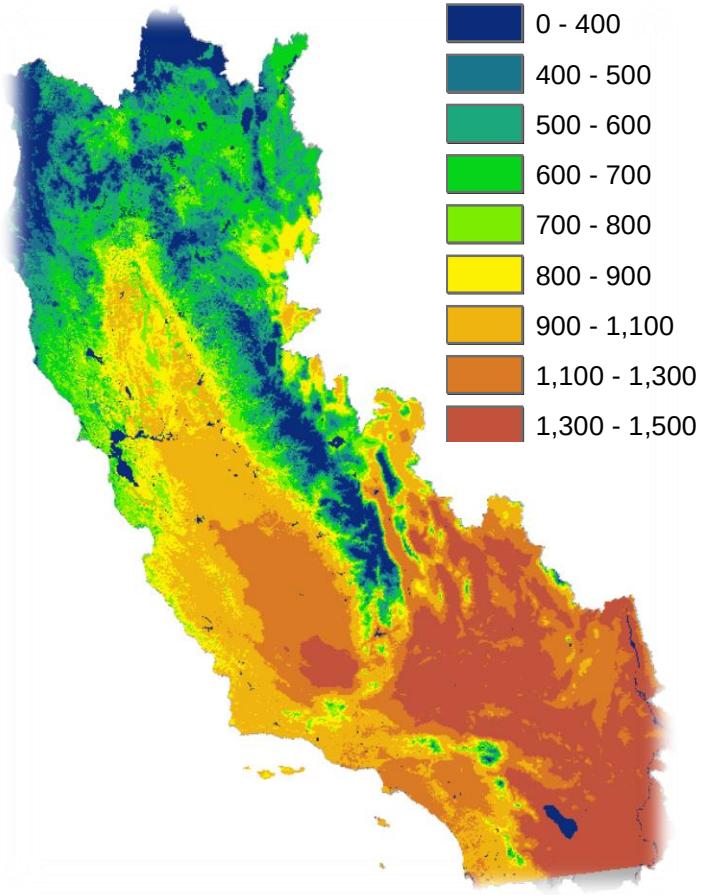
Climate Water Deficit

- Temperature dependent
- Indicator
  - wildfire risk
  - water need to fulfill agricultural demand
  - landscape drought

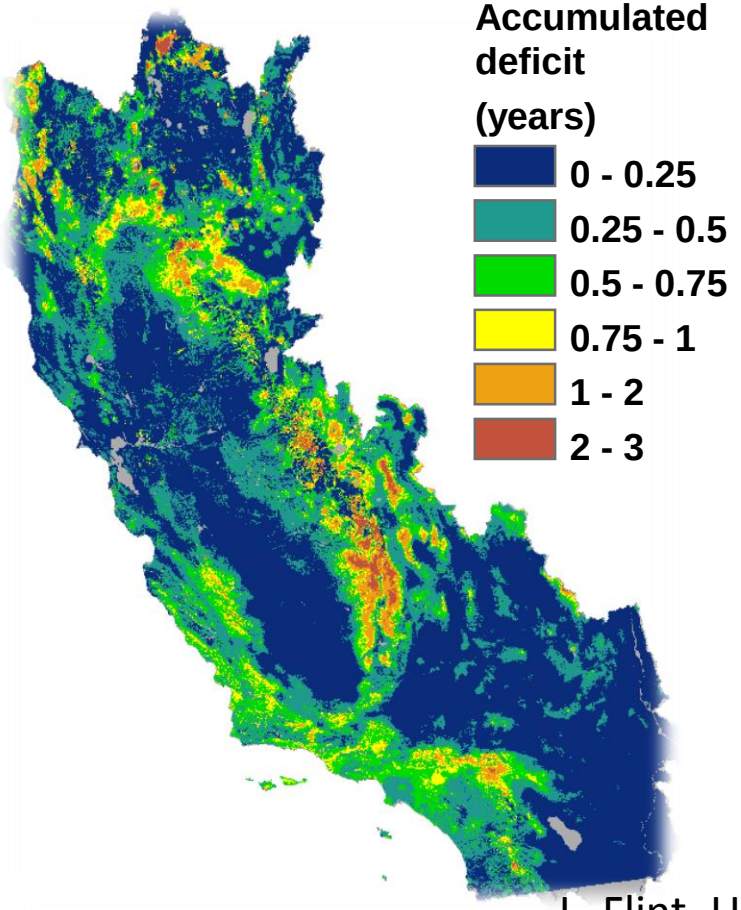
Flint et al., 2013

Landscape Drought: Climate Water Deficit

Climatology
1981-2010



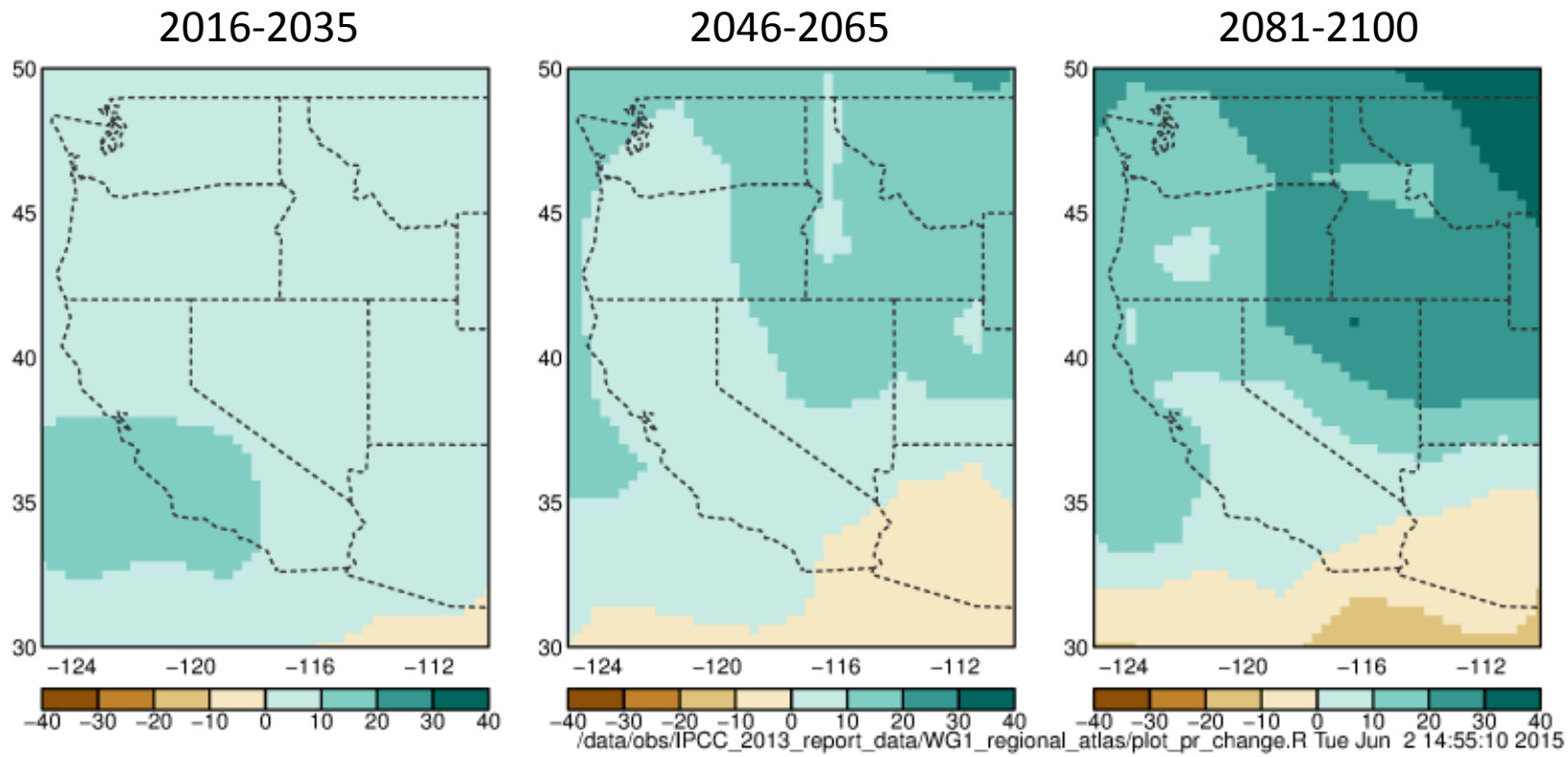
Recent Drought Deficit
2012-2016



L. Flint, USGS

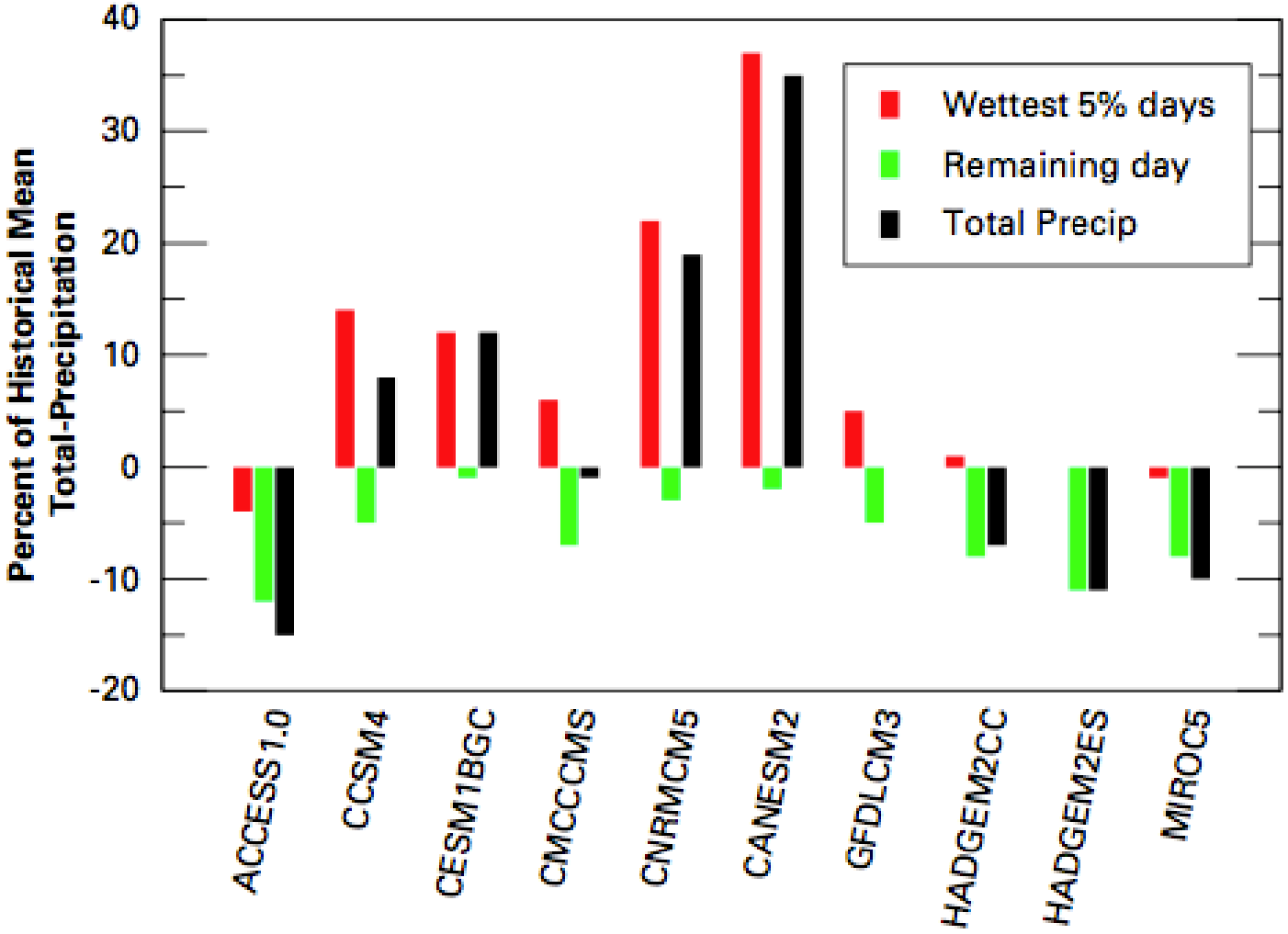
Percent Change in WINTER average precipitation

RCP 8.5 “Business as Usual” Scenario



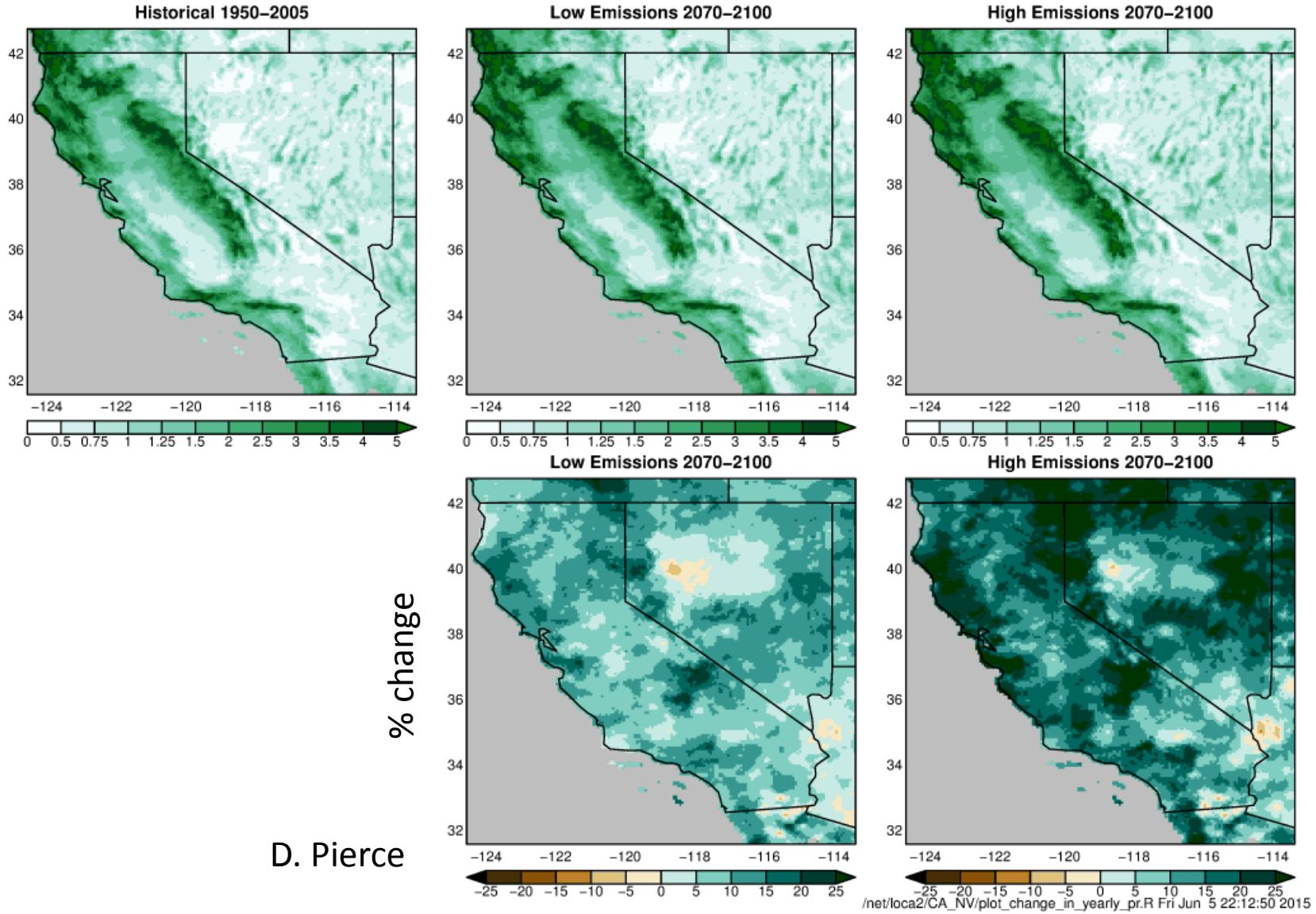
D. Pierce

Precipitation Projections: the large storms explain the spread



Dettinger, 2016

Projected Change in Maximum Precipitation in a Day
Extreme Events are more Extreme



D. Pierce

Conclusions

- S. CA precipitation is highly variable
- Extreme events (ARs) are important in determining if wet or dry year

- Different types of drought include water supply and landscape drought
- Even if water supply is secure, need to consider impact on landscape

- Climate projections are uncertain for CA precipitation
- Extremes are most uncertain
- Extremes will become more extreme

Questions?
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A NOAA RISA team

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